admit of providing the furnaces only with good charging materials, and one must often work with much inferior material, if not even exclusively such. Therefore, naturally, disadvantages in buying obtain. Such market conditions are the cause that, by degrees, the sub-methods of steel melting described below have been built up. Their result under the unfavourable conditions is also an evidence of the adaptability and the elasticity, and thus also of the perfection of the Basic open-hearth process.

(1)) The Scrap-Carbon Process.

There, are localities where scrap is a drug on the market and is to be had at low prices, whilst pig iron is only able to be procured at high prices. Under such conditions good service can be rendered by a process 'for which Leopold Pszczolka, of GniK, took out a patent in the year 1890. According to this process, the deficit of reducing agents in the charge was aided by additions of the most active of all, namely, of carbon, in tho forms given below, in that for each 1 per cent, deficient carbon, 1 to "L'K per cent, graphite, anthracite, or coke; of 2 per cent, coal, 2*5 to 8 per cent, brown coal, or 5 per cent, dried wood was added.

According to Bchmidthammer (Stahl und Eisen, 1906, p. 1248), for oaeli unit of carbon to be added, 1*5 to 2 units of coke is added, which is ground up, in order that it be able to be taken up more rapidly. In order to protect it as much as possible from burning, it should be mixed with about live times the amount of turnings. Tho rich carbon material BO obtained IB appropriately placed bottom-most in the furnace and covered with tho remainder of the charge. In this manner working 100 per eent. scrap is achieved, i.e., entirely without pig iron.

This carbon can, however, only be taken up by the metal, when the name is molted down or, at least, has reached the pasty condition. Since, with scrap, very high temperature is necessary for this, it is clear that melting down is much more prolonged than when pig iron is used, and, further, the formation of larger amounts of scale is 'caused. Thus again,